WIND INDUSTRY COMMENTS ON RETI DRAFT PHASE 1B REPORT

Submitted by Dariush Shirmohammadi and Faramarz Nabavi
RETI Wind Industry Representatives

November 20, 2008

Note: These comments are submitted one day past the deadline with the advance approval of Clare Laufenberg Gallardo. Even with this additional time, RETI's aggressive comment timeline and the expansive nature of the RETI Phase 1B material did not allow the Wind Industry to adequately review all matters covered in the report.

I. SUMMARY OF REQUESTED CHANGES

The wind industry requests that the Stakeholder Steering Committee consider the following proposed changes to the Draft Phase 1B Report at its November 24 meeting. Each issue is further explained in sections II-IV, below.

A. Process Issue

Given the shortage of time that the SSC will have to review the Draft Final Phase 1B report, please show all changes to the draft in redline so that they can easily be reviewed. Alternatively, provide a complete summary of changes made .

B. Economic Analysis

1. The Phase 1A methodology regarding the uncertainty analysis should be carried out. The results, including Figure 5-4, should be portrayed in the Executive Summary as a major finding. Text related to the top 10 CREZs should be removed or at least presented in an appropriate context in line with the Phase 2 guidance document. The "pessimistic and optimistic" runs of the uncertainty analysis should be eliminated.

2. In view of the economic and environmental rankings and their associated uncertainties, and the need to allow flexibility in developing a robust conceptual transmission plan, the SSC should direct the Phase 2 Working Group: (a) to identify a set of "no regrets" upgrades that will be needed under most, if not all, development scenarios, and (b) to identify a set of "phased" additional potential upgrades and reinforcements that could accommodate CREZs that prove to be economically and environmentally viable. This directive should be reflected in the Final Phase 1B Report.

3. Revise upward Northern Baja California wind potential to 9,000 MW and show the associated uncertainty analysis for this and other out-of-state resources.

4. Provide all details regarding CREZ transmission cost estimates, including the formulas and the breakdown of the underlying data. The current CREZ transmission cost calculation seems completely incorrect. In the context of calculating transmission costs:

- In estimating CREZ transmission costs, the calculation should not assume that the full nameplate capacity of all resources must be simultaneously deliverable via the transmission system used.

- The TAC value should be removed from the calculation of the transmission cost associated with a CREZ.

- Losses should be excluded from calculation of transmission costs. If losses are to be accounted for, they should be included in the calculation of the CREZ energy value using locational energy prices. Regardless of the approach taken, line loss should be based on actual data rather than a fixed number for all projects/CREZs.

- To the extent possible, share gen-ties between projects to reduce costs and environmental impacts.

- The uncertainty band for a CREZ transmission cost value should be accounted for in the CREZ economic ranking cost for that CREZ and subsequently reflected in the CREZ uncertainty analysis.

5. Correct capacity value to be consistent with industry benchmark values.

C. Environmental Analysis

1. Where out-of-state data is unavailable, utilize rankings of in-state border-area CREZs as a proxy for nearby out-of-state CREZs.

2. Present the environmental ranking results based on the wind industry's resource footprint assumptions in the Executive Summary and main report.

3. Conduct an additional sensitivity on Criterion #4 (sensitive areas within 2-mile CREZ buffer area).

4. An independent evaluation of the environmental ranking methodology and the robustness of its results should be conducted by a qualified environmental statistician.

5. In developing the "no regrets" upgrades, ensure that, to the extent the upgrades are justified by CREZs, they can be justified by CREZs that score well in the environmental rankings.

D. Other Details

1. Correct inaccurate characterization of the Lassen County wind resource area.

2. Correct inaccurate blackout designation on exclusion map for Cabazon project.

II. ECONOMIC ANALYSIS

A. The Phase 1A methodology regarding the uncertainty analysis should be carried out. The results, including Figure 5-4, should be portrayed in the Executive Summary as a major finding. The text on p. 30 and elsewhere related to the top 10 CREZs should be removed, and the "pessimistic and optimistic" runs of the uncertainty analysis should be eliminated.

We should not bury the results of the uncertainty analysis and fail to carry out the adopted methodology just because it tells us that virtually all of the analyzed CREZs should be considered for Phase 2 planning.[1] The results are meaningful because they tell us that the uncertainties are too large to be able to exclude CREZs from further analysis to determine transmission needs.

This approach is supported by the following:

1. The most suitable conceptual transmission solutions currently being considered in the Phase 2 process provide access to practically all of the identified CREZs and some bordering out-of-state renewable development areas.

2. Carrying only a subset of CREZs into Phase 2 without regard to the many uncertainties in the assumptions would leave behind many commercially promising development areas where significant development activity is going on, such as in the Santa Barbara and Lassen CREZs. The Lompoc project in Santa Barbara County, for example, has a PPA and a development permit and is expected to be constructed next year, but the associated CREZ ranks nearly last in the economic (and environmental) analysis. The uncertainty analysis shows that most of the areas that do not rank among the top CREZs (with uncertainties ignored) are, in fact, potentially competitive.

3. Conversely, some project areas where little or no commercial activity has been shown (the CREZ is largely or entirely made up of proxy projects, e.g., Fairmont and Victorville-A) are among the top-ranked CREZs, although the uncertainty analysis indicates that actual costs could be significantly higher.

4. The amount of out-of-state resources considered was artificially limited, and the limited amounts analyzed were not explicitly ranked on the supply curves. Yet, 15,000 GWh/year of the studied out-of-state resources were determined to be "competitive with California CREZs in the base case economic assessment" (p. ES-10). Further, utilities have signed

[1] The Draft Phase 1A report states that the CREZs will be "grouped into broad tiers based on their relative economics" with the uncertainty and sensitivity analyses taken into account. Specifically, those CREZs "whose low end estimate of ranking costs (established by the uncertainty band) would place them in the first tier of projects will be recommended for Phase 2" and CREZs that are "competitive with the first tier based on the sensitivity analysis … will also be recommended for Phase 2." (See Phase 1A Final Report, pp. 3-49 to 3-52.) This methodology was not carried out in the draft Phase 1B report.

In section 5.8.7, a subset of CREZs is listed as being cost-competitive "based on the results of the uncertainty and sensitivity analysis." However, on the November 12 RETI Plenary Group WebEx call, Black & Veatch stated that this list reflects only the results of the sensitivity analysis.

contracts for a substantial amount of capacity from out-of-state resources, indicating their general competitiveness. [2]

5. A majority of the resource areas thought to be uneconomic have already been excluded from consideration[3] and (as stated on the Nov. 12 RETI Plenary Group WebEx call) further refinements will be made in Phase 2. Thus, the resources remaining under the uncertainty analysis already will have passed significant screening.

Accordingly, under this approach, the text that highlights the top-ranked CREZs, e.g., on p. 30, should be removed or at least modified to provide proper context to the results. The results of the uncertainty analysis, including Figure 5-4, should be portrayed in the Executive Summary as a major finding.

In addition, the text on p. 5-9 and 5-10 and Tables 5-7 and 5-8, which present the separate runs of the economic model relating to the uncertainty analysis, should be eliminated from the text, as this analysis is not particularly meaningful. The analysis considers how "generally pessimistic or optimistic assumptions would affect the relative ranking of CREZs." The analysis thus assumes that all of the uncertainties are correlated, but they are not. The actual cost of one CREZ may be on the high end of the uncertainty band, while another may be on the low end. For example, the wind resource at a particular CREZ may be far greater or lower than B&V has estimated based on imprecise models. Geothermal capital costs required at a particular site are similarly uncertain.

Instead, the two paragraphs that follow Figure 5-4 should be eliminated and replaced with text along these lines:

> "Figure 5-4 is useful in communicating the overall level of uncertainty that can be ascribed to the analysis. Because the bands overlap so much, the results indicate considerable uncertainty in identifying clear CREZ priorities."

Finally, specific generation-cost figures for CREZs should either be replaced with ranges reflecting the uncertainty bands, or the figures should be clearly marked as the midpoint of a possible range of costs.

B. The SSC should direct the Phase 2 Working Group to: (a) identify a set of "no regrets" upgrades that will be needed under most, if not all, development scenarios, and (b) identify a set of "phased" additional potential upgrades and reinforcements that could accommodate CREZs that prove to be economically and environmentally viable. This directive should be reflected in the Final Phase 1B Report.

The "no regrets" upgrades would be addressed in the CAISO's 2009 Transmission Planning Process and POUs' planning processes and would move forward regardless of generation interconnection processes because they will be used and useful regardless. The "phased" additional

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[2] Further, the ability to shape deliveries enables unused transmission capacity to be utilized, avoiding the need for transmission upgrades for a potentially significant quantity of energy. The B&V analysis assumes that transmission upgrades are needed for imports.

[3] An "initial screening was performed to winnow the prospects to a more manageable number based on expected economic viability" (p. ES-3).

potential upgrades and reinforcements would be triggered through interconnection processes, in conjunction with transmission planning processes, as CREZs prove to be economically and environmentally viable.

This flexible approach will preserve the ability for the Phase 2 working group to develop the most robust conceptual transmission plan for the state. In addition, by not pre-judging the market and siting processes, this approach will ensure that the upgrades that are built will be fully subscribed and/or meet general system needs. Importantly, this approach also will encourage upfront funding of upgrades by transmission owners.

C. Revise Northern Baja wind potential to 9,000 MW and show the associated uncertainty analysis for this and other out-of-state resources.

The draft report is based on modeling 5,000 MW of capacity in Northern Baja California, an amount that "matches current interconnection queue applications" (p. 4-25). The amount chosen grossly underestimates the resource potential in this area. Using only queue positions, without modeling potential proxy projects, is inconsistent with the methodology used for in-state resources.

The wind industry's September 2, 2008, comments on the Phase 1B Resource Report suggested an approach more consistent with that used for in-state resources. We recommended that B&V apply a technical potential reduction factor of 70 percent (which was applied to the 9,243 border potential to mimic the environmental, military, and other screens applied to California resources) to the full 29,850 MW potential in Northern Baja, which would leave 8,955 of capacity to be modeled.

The B&V analysis of 5,000 MW of border-area Baja resources produced 2,368 MW of resources deemed to be cost-competitive (Table 5-2). No information was presented regarding the uncertainty associated with this figure, consistent with in-state resources. As discussed at the November 21 SSC meeting, B&V should portray out-of-state CREZs on the supply curve; B&V should also portray the associated uncertainty bands.

D. Provide all details regarding transmission cost estimates, including the formulas and the breakdown of the underlying data.

While Appendix D of the report lists the transmission cost estimates, the data used to come up with these figures has not been presented. Until the time this report was released, B&V had been presenting to the RETI SSC and others that CREZ transmission costs would be in the range of 5% of total CREZ costs. Given that the data presented in Appendix D is far in excess of 5%, we need to understand how these estimates were derived, as they are not even remotely consistent with actual experience. It is necessary for interested stakeholders to discuss potential revisions that may be required, and to increase uncertainty bands as necessary to account for transmission cost uncertainties. We are presenting some of the necessary modifications, as applicable, to the CREZ cost calculations in the following:

1. **In estimating CREZ transmission costs, the calculation should not assume that the full nameplate capacity of all resources must be simultaneously deliverable via the transmission system used.**

The assumption being used is not reasonable as it exaggerates the necessary transmission costs by significant magnitudes and could explain the unreasonably high transmission costs of some CREZs, which exceed 40% of the cost of the CREZ resource development.[4] Consistent with RETI's methodology in Section 3.6.4, for each CREZ, the analysis of simultaneous deliverability should be based on the weighted average of the capacity values used for each project's capacity credit calculation.

2. Eliminate the double-counting of transmission costs.

There is absolutely no justification for allocating to new generators the embedded cost of the CAISO-controlled transmission system, which is recovered through the TAC from ratepayers. If the idea is to capture network upgrade costs by using the TAC, such costs are already accounted for in the incremental transmission costs allocated to CREZs; hence using the TAC in transmission cost calculation amounts to double-counting of the transmission cost.

3. Refine line loss estimates based on actual CAISO data.

The model assumes that all in-state projects are subject to 5% losses. That is not nearly accurate, especially for projects closer to load centers and during shoulder-peak and off-peak periods, which constitute the vast majority of the hours in a year. If accounting for losses is essential, they must be accounted for in the calculation of energy value using time- and location-sensitive loss values.

4. Share gen-ties to reduce cost and environmental impact.

As part of RETI's goal of achieving the lowest-cost solutions with the least environmental impact, project gen-tie lines should be developed as shared, lower-voltage network lines. The federally approved CAISO Generation Interconnection Process Reform and CAISO's LCRIF tariffs provide for the identification of these types of solutions through the cluster study process.

5. The uncertainty band for a CREZ transmission cost value should be accounted for in the CREZ economic ranking cost for that CREZ and subsequently reflected in the CREZ uncertainty analysis.

It is well understood that even after the actual transmission planning studies, the transmission costs are accurate only within +/- 50%. The transmission cost study carried out for the RETI Phase 1B draft report is significantly less accurate than that of an actual transmission planning study. Hence the uncertainty in the transmission cost values must be included in the CREZ ranking cost values and the resulting uncertainty analysis. We are comfortable with a +/- uncertainty band to be used for this purpose.

[4] It is standard practice for many RTOs, such as the PJM Interconnection and Midwest ISO, to model intermittent resources such as wind in the following manner: make sure that the transmission line has the physical capability of accommodating the full nameplate capacity of the generator, but model only a percentage of the nameplate capacity, well below the net capacity factor, as having to access Available Transmission Capacity (ATC). This approach would tremendously reduce the need for upgrades and the costs of those upgrades, while preventing an excessive overbuild of transmission that would not serve ratepayer or environmental interests.

6. Use industry benchmark values for capacity value.

B&V should correct the capacity value to a more reasonable figure, e.g., $130/kW-year. The $204 per kW-year fixed cost of CT capacity overstates the value of capacity. Based on recent testimony filed in SCE's GRC, the net cost of CT capacity (after subtracting energy rents) is in the range of $87 to $144 per kW-year. A reasonable, middle-of-the-road figure for the current value of capacity in California would be $130 per kW-year. See **Appendix A** for further details.

In addition, B&V's approach assumes that 100% of the capacity value is attributable to the summer on-peak period, which overstates the value of summer on-peak capacity and under-estimates the value of capacity in other time periods. If not for this analysis, this correction should be made in future analyses. At a minimum, for this report, B&V should add a footnote in section 3.6.4 stating essentially the following:

> "The capacity credit assumes that 100% of a project's capacity value is attributable to its output during the summer on-peak period. This overstates the value of summer on-peak capacity and under-estimates the value of capacity in other time periods. For example, the capacity allocation factors that California utilities use in QF pricing typically assign no more than 80% of capacity value to the summer on-peak period; most of the rest is assigned to the summer and winter mid-peak periods."

III. ENVIRONMENTAL ANALYSIS

A. Where out-of-state data is unavailable, utilize rankings of in-state, border-area CREZs for nearby out-of-state CREZs.

Where out-of-state resources are located in close proximity to a California CREZ with similar terrain and habitat characteristics, for the purposes of RETI's high-level analysis, these particular out-of-state resources should be modeled as having a similar environmental ranking (unless evidence shows otherwise) if comparable data cannot be obtained or analyzed for this report.

It would be unfair and inefficient to preclude consideration of out-of-state/country CREZs in Phase 2 due to lack of datasets needed for the environmental ranking. The Nevada side of the Mountain Pass CREZ appears to be appropriate for such treatment, as does the Northern Baja California resource which appears to have terrain and habitat similar to the San Diego South CREZ.

B. Present the environmental ranking results based on the wind industry's resource footprint assumptions in the Executive Summary and main report.

The reasoning for this approach was covered in an October 9, 2008, wind industry memo to the SSC, and supplemented by further information supporting the revised metric for the wildlife corridor criterion, both included in these comments as Appendix B. The results presented in the Draft Phase 1B Report underscore the need for this additional approach, as some wind CREZs have scored very poorly

when, in reality, detailed, site-specific environmental studies that have been conducted within these areas show relatively low environmental impacts.[5]

C. Conduct an additional sensitivity on Criterion #4 (sensitive areas within 2-mile CREZ buffer area).

This criterion appears to substantially affect the scores of a number of CREZs. And yet there may be no nexus between project development and environmental sensitivities within the 2-mile buffer zone. Any nexus will depend on the type of species present within the buffer zone. Criterion #4 makes no distinction between types of species present. Many species, certainly sensitive flora, will be unaffected by project developments up to two miles away, particularly those with small disturbance footprints such as wind.

D. An independent evaluation of the environmental ranking methodology and the robustness of its results should be conducted by a qualified environmental statistician.

No analysis has been done (or at least shared publicly) regarding the robustness of the results of the environmental ranking methodology. Such analysis might include sensitivity analyses on the results of each criterion and the overall environmental ranking results. Based on such an analysis, error bands might be developed akin to what was done with the economic ranking. An independent evaluation of the methodology and its results should be conducted by a qualified environmental statistician and made publicly available, even if this cannot be achieved until after the Phase 1B Report is made final. Additionally, we point out that the EWG was supposed to have had an opportunity to review and consider the preliminary results and make changes in the methodology as warranted. That was never done.

E. In developing the "no regrets" upgrades, ensure that, to the extent the upgrades are justified by CREZs, they can be justified by CREZs that score well in the environmental rankings.

Environmental stakeholders should be assured that the "no regrets" conceptual transmission plan, discussed above, could be supported by the CREZs that score well in the initial environmental rankings, to the extent that the plan is justified by CREZ developments rather than general transmission system needs. Given the approximate nature of the environmental ranking process, however, the plan should also be flexible enough to accommodate alternative CREZ development supported by site-specific detailed environmental reviews.

As with the economic ranking, additional phases beyond the "no regrets" plan should be triggered by developers' informed judgment about the economic and environmental viability of project

[5] For example, the Lompoc project in Santa Barbara County has gone through the CEQA process and has been issued a permit by Santa Barbara County. That permit was based on studies that show, for example, that the number of passage spring migrants is among the lowest that has been recorded at any wind farm project site in California (see http://www.countyofsb.org/energy/projects/Wind/LompocFEIR/Appendices/Appendix%20B/B.5_ES.pdf). Similarly, initial environmental studies at sites within the Lassen CREZ area indicate no major environmental concerns.

developments. Actual project developments will also be guided by future activities such as the BLM/CEC solar PEIS and the NCCP process recently addressed in an Executive Order of the Governor.

IV. ADDITIONAL DETAILS IN NEED OF CORRECTION

1. Correct Lassen County Wind Resource Assessment

B&V has not accurately characterized the proxy and commercially identified wind projects in the Lassen County region, as several parties will point out in their separate comments. We understand that significant discussions have taken place on this point, and expect the information to be corrected in the final report.

2. Correct blackout designation on exclusion map

The Cabazon Wind Energy 150-MW wind project area near Cabazon/Palm Springs is private land within the bounds of the Santa Rosa and San Jacinto Mountains National Monument. Although B&V has included the project in its assessments and the project is shown within a CREZ, the area is inaccurately portrayed as a "blackout" exclusion area on the layered RETI maps. It is very important to the project developer that this land not be shown as a blackout area so that the public is not misled as to the status of the land.

Appendix C is a map showing the land area at issue. The private land area should be shown as a "white" area in all maps where blackout areas are shown. Alternatively, all maps showing this land as a blackout area should include a note stating:

> "Some areas indicated as Environmental Blackout Areas in the Santa Rosa and San Jacinto Mountains National Monument are, in fact, private property exempt from monument status. (Public Law 106–351—Oct. 24, 2000 Santa Rosa and San Jacinto Mountains National Monument Act of 2000 114 Stat. 1364 Public Law 106–351—Oct. 24, 2000)."

APPENDIX A: CAPACITY VALUE

B&V assess the capacity value of renewable resources based on their current resource adequacy (RA) value, which, for intermittent renewables, the CPUC has set based on the resource's historical on-peak (weekdays, noon to 6 p.m.) capacity factor. B&V then multiplies this RA value by a measure of the value of capacity – the fixed costs of a combustion turbine (CT), which BV cites as $204 per kW-year from 2007 CEC data.

The Wind Industry has two concerns with this approach. First, this method assumes that 100% of the capacity value is attributable to the summer on-peak period. This overstates the value of summer on-peak capacity and under-estimates the value of capacity in other time periods. For example, the capacity allocation factors that the California utilities use in QF pricing typically assign no more than 80% of capacity value to the summer on-peak period; most of the rest is assigned to the summer and winter mid-peak periods. SCE's current general rate case filing (A. 08-03-002) includes a loss-of-load-expectation (LOLE) study that modeled the entire WECC grid and shows that just 70% of the LOLE occurs during the summer on-peak hours. The result of SCE's LOLE analysis is shown in the Table below.

SCE Relative LOLE Factors (Sum = 1)

Period	Summer	Winter
On-peak	.701	n/a
Mid-peak	.205	.081
Off-peak	.009	.004

Source: SCE, A. 08-03-002, at SCE-02(Updated), page 26, Table I-8.

If B&V has time-differentiated output for the resources that it surveys, it should use these LOLE factors to determine a more accurate time-differentiated value of capacity.

Second, the $204 per kW-year fixed cost of CT capacity overstates the value of capacity. It is well-accepted that modern CTs can generate energy-related rents in some hours; thus, the $204 per kW-year fixed costs of CT capacity need to be reduced by the profits that a CT could earn in the energy market. This adjustment has been accepted by the CPUC for QF pricing and electric rate design. Based on recent testimony filed in SCE's GRC, the net cost of CT capacity (after subtracting energy rents) is in the range of $87 to $144 per kW-year, not $204 per kW-year. SCE itself proposed $114 per kW-year. The Wind Industry believes that the lower end of this range uses out-dated, too-low CT capital costs that are inconsistent with the $204 per kW-year 2007 CEC figure cited by B&V. The Wind Industry thus believes that a reasonable, middle-of-the-road figure for the current value of capacity in California is $130 per kW-year.

APPENDIX B:
WIND INDUSTRY PROPOSAL ON ENVIRONMENTAL RANKING METHODOLOGY

October 9, 2008

To: RETI Stakeholder Steering Committee

From: Dariush Shirmohammadi, RETI Wind Representative
Nancy Rader, RETI EWG Wind Representative

Re: Wind Industry Objection to Environmental Ranking Process

The wind industry strongly supports the RETI process as a means of identifying and expediting the development of the transmission capacity needed to access promising concentrated renewable resource areas in California. Toward that end, we have participated extensively in the CREZ economic and environmental ranking processes and have already made significant contributions to the economic ranking process. The wind industry supports responsible environmental stewardship as a principle of the RETI process. We also understand the challenges associated with forging consensus on a number of complex, contentious issues and the need for all parties to compromise.

Regrettably, however, the wind industry is unable the support the current implementation of the environmental CREZ ranking methodology.[1] As implemented, the methodology systematically ranks wind project areas poorly because: (a) the criteria are focused exclusively on land-based and wildlife issues and do not address other environmental impacts where wind would fare relatively well; (b) the formulas for the land/wildlife criteria incorrectly assume that wind projects disturb the entire lease area, rather than the 3.5% area actually disturbed; (c) several criteria appear to count the same or similar environmental concerns; and (d) the quintile scoring approach magnifies these problems. We believe the details need refinement to provide a more balanced assessment of potential environmental concerns related to CREZs. We offer three specific changes to improve the implementation of the methodology, which can readily be performed, to correct for some of the problems:

- eliminate the 5x weighting factor for wind in Criterion #7 (Important Bird Areas);
- apply wind projects' actual 3.5% footprint to Criterion #6 (wildlife corridors), and
- use wind projects' actual 3.5% footprint area for Criterion #3 (sensitive areas).

In addition, it may be appropriate to consider, at least as a sensitivity analysis, the results of an alternative approach to translating environmental concern values into environmental scores, such as a dual approach that would use scores of 1 and 2 based on the position of an environmental concern value vis-à-vis the mean or median value number.

Finally, we request that the revised criteria and results also be professionally and independently reviewed to ensure that the results are not simply a reflection of the land intensity of the renewable technologies.

[1] Twelve wind companies who reviewed this memo have indicated agreement with it. Two wind companies have indicated that they do not support the memo's submission. One company is officially neutral. Some companies did not respond, or indicated that they have not had enough time to consider the issues and weigh in with a firm opinion. Finally, some of the companies that support this memo nevertheless believe that water usage, water quality, and facility discharge issues should have been taken into account in the ranking process.

Background and Explanation

In the process of iterating the details of the ranking methodology, the effort has strayed from its original purpose, which was to identify areas of greater potential environmental concern and was not to assess the relative environmental impacts of technologies. As implemented, however, the methodology systematically ranks wind project areas poorly for these reasons: (a) all of the criteria are focused on land-based and wildlife issues; no consideration has been given to other types of environmental concerns (e.g., water supply, water quality, and emissions issues), where wind projects would fare well, (b) the formulas for the land/wildlife criteria incorrectly assume, directly or indirectly, that wind projects disturb the entire lease area, even though it is well-documented that the area actually disturbed represents only 3.5% of that area,[2] (c) several criteria appear to count the same or similar environmental concerns, and (d) the quintile approach to scoring arbitrarily magnifies these problems.

As a result, CREZs are being prioritized based on a skewed set of criteria and scores that inaccurately cast wind development areas as having greater relative overall potential environmental concerns. Of additional concern to the wind industry is that this flawed assessment, in a report that will carry the imprimatur of the State, is highly likely to carry over into other venues, despite the negotiated disclaimers.

The disagreement began just in the past few weeks, when the EWG discovered that there was a significant difference of opinion regarding the definition of the project "area" on which wind CREZs (or portions of CREZs) would be ranked. Parties also expressed concern about the quintile ranking approach. On the project area issue, the discussion finally produced a ranking system adopted by the EWG -- over the wind industry's strong objection -- in which (a) wind's 3.5% direct-footprint figure is being used for one of the criteria, the "footprint" criterion, (b) a wholly new criterion was added for "important bird areas" (IBAs), under which wind project areas are being weighted five times more heavily than other project areas (the only criterion that contains a weighting factor, despite other types of sensitive areas, such as desert tortoise habitat), and (c) the full wind-project lease area will be used (directly or indirectly) for most other criteria. (See summary table, below.) The concern over the quintile approach was not meaningfully considered.

The preliminary EWG results have made it clear to us that the methodology, as implemented, requires more substantial changes. A memo from Rich Ferguson to the EWG, dated October 6, 2008, contained observations on the preliminary results. Among other similar statements, it stated, "CREZs providing less energy and less energy per unit area generally receive higher scores." Similarly, Rich stated on an EWG call the following Monday that (closely paraphrasing), ***"the more concentrated the energy source, the better the score it tended to get, with geothermal faring the best, followed by solar."*** Stated another way, rather than serving as an indicator of sensitive areas, the methodology as implemented is strongly influenced by the land-intensity per MWh of the CREZ (as measured by wind projects' lease area rather than actual 3.5% footprint).

[2] A recent U.S. DOE report, developed in cooperation with NREL and AWEA with significant NGO input, estimated wind's actual disturbance area at 2% - 5% of the lease area (average: 3.5%). See *20% Wind by 2030; Increasing Wind Energy's Contribution to U.S. Electric* Supply, U.S. DOE (May 2008) at p. 110 (available at www.20percentwind.org/20percent_wind_energy_report_05-11-08_wk.pdf).

Further, it became clear that a number of the criteria double-count, and perhaps even triple-count, similar, if not the same, environmental issues, and the quintile approach to scoring further compounds the problem. Finally, all parties involved readily admit that the methodology and underlying data are somewhat arbitrary and incomplete, contain gross approximations, and are not reflective of many facts on the ground.

The proposed changes that we submit to the SSC are essential in order to reduce the inaccuracy of the scores and to prevent wind project areas (and the CREZs holding them) from being penalized unfairly in the RETI process. Further, our proposal is in keeping with the understanding of the EWG all along – that we would consider modifying the methodology if the preliminary results did not survive a "sanity check." We believe they do not. Specifically, we propose three changes to the implementation of the EWG's methodology:

- eliminate the 5x weighting factor for wind projects in Criterion #7 (Important Bird Areas);
- apply wind projects' actual 3.5% footprint area to Criterion #6 (wildlife corridors); and
- use wind projects' actual 3.5% footprint area for Criterion #3 (sensitive areas).

In addition, it may be appropriate to consider, at least as a sensitivity analysis, the results of an alternative approach to translating environmental concern values into environmental scores, such as a dual approach that would use scores of 1 and 2 based on the position of an environmental concern value vis-à-vis the mean or median value number.[3] Finally, we request that the revised criteria and results also be professionally and independently reviewed to ensure that the results are not simply a reflection of the land/energy-intensity of the renewable technologies.

Our reasoning for proposing these modifications is as follows.

1. **Eliminating the weighting factor for the IBA criterion will partly correct for the over-emphasis on wind projects' semi-unique environmental issue.** Because the EWG ranking was not intended to characterize or predict project impacts, only to flag areas of potential environmental concern, the ranking methodology does not look at the significant water use, water quality, and/or emissions issues associated with some technologies. Yet, by applying a five-times weight to IBA areas that overlap with wind project areas, the implemented methodology magnifies the criterion related to wind projects' semi-unique impacts, while not weighting other very sensitive habitat areas (such as desert tortoise habitat) primarily affected by non-wind project areas and ignoring altogether the semi-unique issues of other technologies.

   Further, the IBA is not commonly used in project siting, and it is clearly a very gross indicator of potential impacts on birds. For example, it was not designed to be an indicator of potential wind

[3] A dual approach (as opposed to quintile approach) to scoring the CREZs on environmental grounds is more consistent with the gross approximations associated with the underlying data. All parties agree that the environmental concern values do not accurately represent all the facts on the ground. For example, as one EWG participant has pointed out, the significant species indicator does not distinguish between a site in which a single desert tortoise was once seen and prime desert tortoise habitat. Furthermore, a glance at the data shows that while an environmental ranking value separating two CREZs can be different by less than one percent, they can fall into two separate quintiles. There is no justification for magnifying a concern that in itself was valued using very gross approximations.

project impacts (e.g., it does not distinguish between birds likely to be at greater or lesser risk) and it covers very large areas in which species presence is likely to vary substantially. Yet, the quintupled weighting of wind areas that overlap with IBA areas will automatically produce a poor score.

2. **The wildlife corridor criterion is highly correlated with the IBA criterion.** In the attached EWG Excel spreadsheet showing the results of the rankings, we have shown that the wildlife corridor criterion (#6) and the IBA criterion (#7) are highly correlated: nearly 40% of the scores are identical, and another 30% differ by one point. Thus, 70% of the CREZ's scores on one criterion will closely or exactly predict the score for the other. As the spreadsheet also shows, other criteria are also correlated, but not to the extent of these two.

   The EWG never considered the underlying data for these two criteria (indeed, CEERT staff did not even possess a description of the corridor data when it was recently requested), nor did the EWG ever seriously consider the extent to which any of the criteria were double or triple counting similar underlying concerns. At a minimum, now that it is clear that two of the criteria are highly correlated, one of them must be modified, if not eliminated.

   The wildlife corridor criterion over-estimates the concern posed by wind projects. Wildlife corridors relate to the ability of species to move and migrate. Wind project areas are far more permeable than other project areas, and thus will have lower impacts, which is not taken into account in that criterion. Thus, in order to accurately compare the potential blockages to wildlife corridors, the actual development footprint as a percentage of the lease area (3.5%) should be used for this metric. [See Addendum, below.]

3. **Using wind's actual 3.5% footprint, rather than lease-area, as the basis for scoring Criterion #3 ("sensitive areas") is justified for many reasons.**

   a. **The addition of the IBA criterion accounts for avian issues.** The IBA criterion (#7) was added very recently to EWG scoring to reflect potential avian concerns that some parties felt were not fully captured in the other criteria, although birds are included in the CDFG species database being used for Criterion #5 and are reflected to some extent in Criteria #3, #4 and #6. Criteria #4 and #5 will still overemphasize wind projects' land-based impacts on a per-kWh basis.

   b. **All renewable technologies should be treated similarly.** Criterion #3 will use only the direct disturbance areas for the other renewable generation technologies. The CREZ areas that the EWG propose to use for the environmental ranking are:

      - Geothermal – 1 acre per MW (B&V drew lines around the wells, pipes, power block, etc.)

      - Solar – 7 acres per MW (which includes power block, solar field, and roads -- virtually no space that is not directly affected).

      - Wind – 45 acres per MW (the entire lease area, of which the area actually disturbed represents only 3.5% - turbine pads, roads, maintenance and storage facilities, substations, etc.).

Thus, the issue is whether wind project areas will be ranked with "area" defined as the entire lease area, or will be treated similarly to the other technologies, with "area" defined as wind's actual disturbance area. Using the lease area for wind projects will result in wind rankings that are far worse than can be reasonably supported.

c. Wind is not unique in affecting the environment beyond its direct footprint. The environmental representatives have stated in discussions that wind's footprint should be expanded in order to address various impacts that may go beyond wind's direct footprint and are not captured by the other criteria, such as water quality, wildlife impacts, air quality impacts from cars and trucks, and visual impacts. None of these impacts are unique to wind; the other technologies also have impacts beyond their direct footprints. The fact that the EWG was unable to come up with criteria to directly address these potential concerns does not justify artificially inflating wind's footprint to get at these impacts indirectly for one technology only.

Moreover, as noted earlier, the purpose of the EWG ranking procedures has never been to determine the actual environmental "impacts" of any CREZ; on the contrary, the ranking is intended only to indicate areas that are of greater potential concern.

d. EWG's proposal lacks any foundation in practice. Even if wind projects were unique in affecting the environment beyond its direct footprint, there is no relationship between the lease area and these impacts. For example, inflating a wind project's direct-impact area by 28 times (from 3.5% to entire lease area) does nothing to differentiate between a project that might have high or low visual, water quality, or wildlife impacts. These impacts, if any, depend on the particular characteristics of the site and are, of course, addressed in the permitting process.

Permitting agencies do not consider the lease area in determining impacts. They look at direct and indirect disturbance on species of concern and their habitat, which is usually related to direct disturbance areas. The "fractured habitat" issue that some EWG participants have raised is considered on a case-by-case basis and, if it is an issue at all,[4] usually involves a small portion of the lease area. The proposal to use the entire lease area is therefore inconsistent with existing laws governing project siting.

The EWG proposal and the wind industry's proposed modifications are summarized in the table below. We believe that the changes proposed here can be implemented in minutes given the spreadsheet tool developed by CEERT. Given that CEERT will have to update the EWG scores based on B&V's new CREZ configurations, we believe that the changes proposed here will have no work burden on the team performing the scoring and thus will not delay the RETI process.

[4] It would not be an issue, for example, with projects on farm land.

Summary of Wind Industry Proposed Change to EWG Ranking Criteria			
Criterion	**Description**	**Formula and Proposed Revisions**	**Notes**
Criterion #1	Development footprint	(0.035 x wind area + solar area + geothermal area) divided by (Total Annual Energy of CREZ)	
Criterion #2	Transmission Footprint	(ROW) divided by (Total Annual Energy)	
Criterion #3	Sensitive Areas in CREZs	(Yellow and black areas within CREZ) divided by (Total Annual Energy) PROPOSED REVISION: Wind CREZ area = 0.035 x lease area. If wind lease area is not completely within black/yellow area, and actual wind disturbance area is not clear, assume all disturbance area is in black/yellow area.	Reduce "area" for wind CREZ to direct footprint.
Criterion #4	Sensitive Areas in 2-mile CREZ Buffer Areas	(Yellow and black areas within CREZ buffer) divided by (Total Annual Energy)	
Criterion #5	Significant Species - CDFG database	(Number of significant species in CREZ) divided by (Total Annual Energy)	
Criterion #6	Wildlife Corridors	(Length of wildlife corridors within CREZ) divided by (Total Annual Energy) For wind CREZ or portion thereof, multiply corridor length by 0.035 to account for actual footprint.	Alternatively, eliminate the criterion.
Criterion #7	Important Bird Areas	((IBA Area within CREZ) divided by (Total Annual Energy)) ~~multiplied by Weighting Factor~~ ~~Weighting Factor = (5 x wind project area + solar project area + geothermal project area)~~ ~~divided by (sum of project areas)~~	Eliminate weighting factor.
Criterion #8	Previously Disturbed Lands (mines, etc.)	(CREZ Area) divided by (Number of degraded sites within CREZ) divided by (Total Annual Energy)	

APPENDIX B ADDENDUM: WIND & WILDLIFE CORRIDORS

This addendum describes the opinion of many experienced biologists, permitting managers, and CEQA practitioners in the wind industry regarding the scientific or logical basis for the wildlife corridor criterion in the RETI EWG ranking methodology that implicitly assumes that wind projects pose a barrier along the entire length of a wildlife corridor.

The wind industry has proposed that the wildlife corridor criterion assume an impact on the corridor proportionate to wind's actual footprint relative to the lease area – i.e., assume an impact on 3.5% of the length of the corridor. Although the wind industry believes that the actual impact is much lower in the majority of instances, and that wind projects can actually protect landscape connectivity by precluding suburban development, we proposed the 3.5% impact in the spirit of compromise within an evaluation framework that everyone agrees is a very coarse approximation of potential impacts.

The following briefly summarizes the experience of wind project practitioners with wildlife corridors. This experience is consistent with the 2000 conference report that produced the information on which the EWG corridor criterion is based. (See www.calwild.org/resources/pubs/linkages/Missing_release15.pdf.)

The impacts that may occur from development within wildlife corridors are species- and site-specific. (The RETI wildlife corridor criterion makes no distinction between the species present in the identified corridors.) For ground migrating species, wind farms pose no barriers to migration or only minor impacts in most cases. In most parts of the state, avian species migrate well above the height of wind turbines. (This was shown in San Gorgonio, for example, by an SCE radar study which found spring and fall migrants travel above the rotor zone, and at the Lompoc project in Santa Barbara County, which performed radar surveys for two years and found that avian migrants were traveling at altitudes much higher than the project area.[5]) Further, fatality studies in California conducted by the CEC in Tehachapi, Altamont, and San Gorgonio did not find high levels of migrant fatalities. Wind projects would be unlikely to impact aquatic wildlife corridors.

Placing a project between two core habitat areas does not necessarily disrupt the movement of a particular species and should not be assumed. [6] Potential barriers are evaluated prior to project development based on the project characteristics that may pose a risk. Generally, however, wind turbines will not interfere with the passage of wildlife. There are some Midwestern grassland species (prairie chickens) that are sensitive to any structures in their environment, but most species in California are not sensitive to wind turbines.

Depending on the species and specific activity within a corridor, wind power development may actually enhance or protect wildlife movement. Current practice in California is to design wind turbine strings with turbines spaced at least 500' and up to 970' apart, and with rows of turbines spaced a minimum of 2000' and as much as 3250' apart. This allows large opportunities for wildlife to traverse the sites. Topographic barriers to wildlife passage are not prevalent and can be mitigated.

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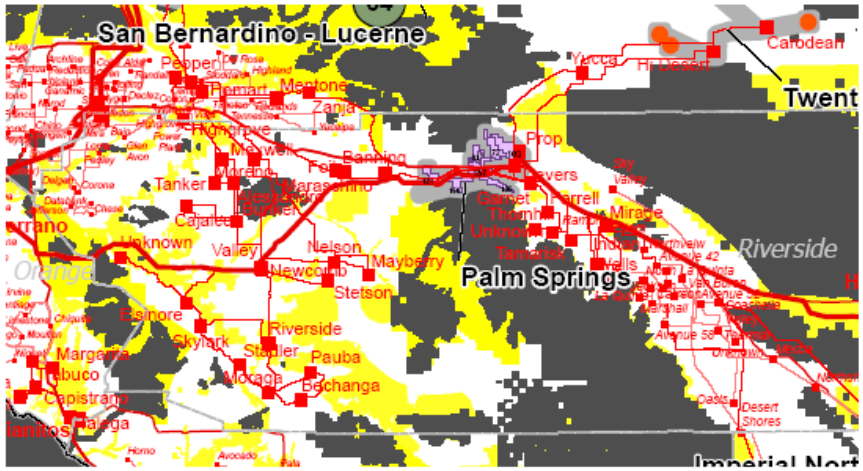
[5] See Appendix B.7 – Analysis of WSR-88D Data to Assess Nocturnal Bird Migration over the Lompoc Wind Energy Project, Lompoc Wind Final Environmental Impact Report (Santa Barbara County, 2008).

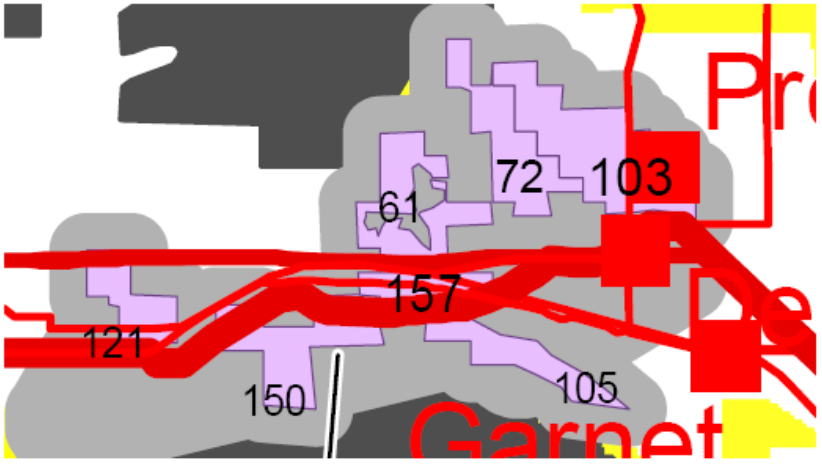
[6] See, e.g., "General Biological Assessment Update, Mountain View III Wind Energy Facility, County of Riverside" Natural Resource Assessment, Inc., January 27, 2003; and Walter, Leslie & Jenks, "Response of Rocky Mountain Elk (Cervus elaphus) to Wind-power Development," Am. Midl. Nat. 156:363-375.

With the dominant pressure for urbanization in many areas of California, it is realistic to assume that wind power is an economically competitive alternative land use that discourages suburban development, which would likely have far greater impacts on species movement and migration. A wind turbine string could itself potentially be considered a wildlife corridor especially if future land use would have a greater likelihood of affecting the area. (This has actually occurred with transmission lines in another state where an environmental group actively supported the proposed right-of-way as providing and protecting wildlife connectivity.)

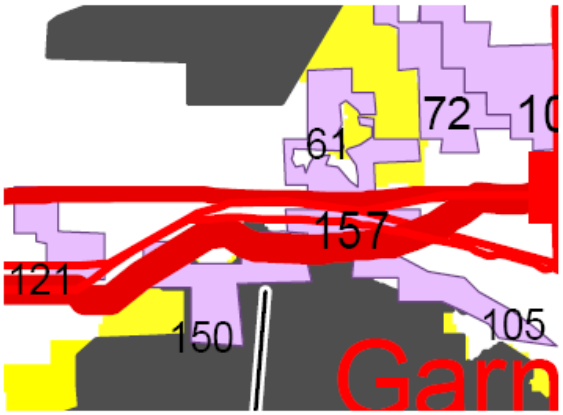
APPENDIX C: CABAZON MAP



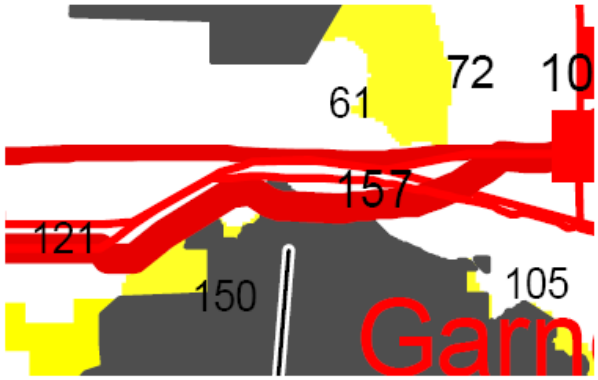
200% Zoom In on Palm Springs CREZ



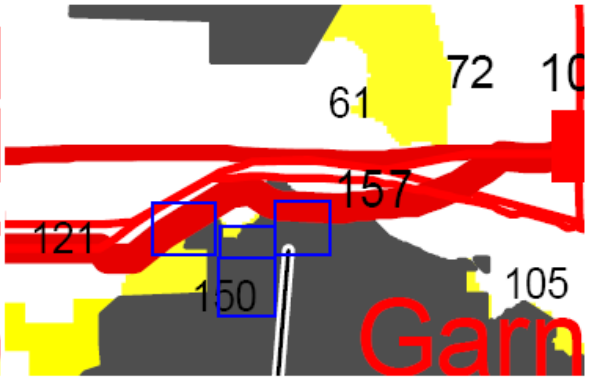
1200% Zoom In on Palm Springs CREZ



Remove CREZ Overlay (Gray Bubbles Removed)



Remove Wind Overlay (Purple Projects Removed)



150 MW Cabazon Project Outlined, notice Blackout Area